IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Please cancel claims 2-9, 12-14, 20-22, 27-29 and 35-44

1-9. (Canceled)

10. (Currently Amended) A method of determining the location of a receiver in receipt of at least three positioning signals, comprising:

identifying a reference location with the at least three positioning signals;

~~retrieving an initial height of the receiver based on the identified reference location;~~

identifying a plurality of grid points located a predetermined distance from the reference location;

determining an average height of the receiver based on elevation information associated with the plurality of grid points;

determining an average height error value based on the elevation information associated with the plurality of grid points and the average height of the receiver;

deriving at least three simultaneous equations associated with the at least three positioning signals;

solving the at least three simultaneous equations with the average height of the receiver and the average height error value that results in a position and a corresponding horizontal error ellipse;

fitting a two-dimensional polynomial to the corresponding horizontal error ellipse; and

solving the at least three simultaneous equations and the two-dimensional polynomial that results in an altitude of the satellite positioning receiver.

11-14. (Canceled)

15. (Previously Presented) The method of claim 10, further including:

acquiring second height of the receiver using variables from the two dimensional polynomial; and

comparing the difference between the second height and altitude to a predetermined threshold.

16. (Previously Presented) The method of claim 15, wherein the predetermined threshold is 100 meters.

17. (Previously Presented) The method of claim 10, wherein the receiver is located in a server.

18. (Currently Amended) A satellite positioning receiver apparatus in receipt of at least three positioning signals, comprising:

means for identifying a reference location with. the at least three positioning signals;

~~means for retrieving an initial height of a satellite positioning receiver~~;

means for identifying a plurality of grid points located a predetermined distance from the reference location;

means for determining an average height of the satellite positioning receiver based on elevation information associated with the plurality of grid points and for determining an average height error value based on the elevation information associated with the plurality of grid points and the average height of the satellite positioning receiver;

means for deriving at least three simultaneous equations associated with the at least three positioning signals;

means for solving the at least three simultaneous equations with the average height of the satellite positioning receiver and the average height error value that results in a position and a corresponding horizontal error ellipse;

means for fitting a two-dimensional polynomial to the corresponding horizontal error ellipse; and

means for solving the at least three simultaneous equations and the two-dimensional polynomial that results in an altitude of the satellite positioning receiver.

19. (Previously Presented) The apparatus of claim 18, wherein the means for determining the average height of the satellite positioning receiver further includes:

means for identifying one of a minimum height of the satellite positioning receiver and a maximum height of the satellite positioning receiver; and

means for setting the average height error value equal to the absolute value of the difference between the one of the minimum height of the satellite positioning receiver and the maximum height of the satellite positioning receiver and the average height of the satellite positioning receiver.

20-22. (Canceled)

23. (Previously Presented) The apparatus of claim 18, further including:

means for acquiring a second height of the satellite positioning receiver using variables from the two dimensional polynomial; and

means for comparing the difference between the second height of the satellite positioning receiver and altitude to a predetermined threshold.

24. (Original) The apparatus of claim 23, where the predetermined threshold is 100 meters.

25. (Currently Amended) A machine-implemented method for determining the location of a satellite positioning receiver in receipt of at least three positioning signals, the method comprising:

identifying a reference location upon receipt of at least three positioning signals;

~~retrieving an initial height of the satellite positioning receiver;~~

identifying a plurality of grid points located a predetermined distance from the reference location;

determining an average height of the satellite positioning receiver based on elevation information associated with the plurality of grid points;

determining an average height error value based on the elevation information associated with the plurality of grid points and the average height of the satellite positioning receiver;

deriving at least three simultaneous equations associated with the at least three positioning signals;

solving the at least three simultaneous equations with. the average height of the satellite positioning receiver and the average height error value that results in a position and a corresponding horizontal error ellipse;

fitting a two-dimensional polynomial to the corresponding horizontal error ellipse; and

solving the at least three simultaneous equations and the two-dimensional polynomial that results in an altitude of the satellite positioning receiver.

26. (Previously Presented) The machine-implemented method of claim 25, wherein the determining an average height further includes:

identifying one of a minimum height of the satellite positioning receiver and a maximum height of the satellite positioning receiver; and

setting the height error value equal to the absolute value of the difference between the one of the minimum height of the satellite positioning receiver and the maximum height of the satellite positioning receiver and the average height of the satellite positioning receiver.

27-29. (Canceled)

30. (Previously Presented) The machine-implemented method of claim 25; further including:

acquiring a second height of the satellite positioning receiver using variables from the two-dimensional polynomial; and

comparing the difference between the second height of the satellite positioning receiver and the altitude to a predetermined threshold.

31. (Previously Presented) The method being implemented by a processor of claim 30, where the predetermined threshold is 100 meters.

32.-33. (Canceled)

34. (Previously Presented) A server, comprising

a transceiver that receives a plurality of satellite code phases;

a memory with digital terrain elevation data:

a controller that processes the plurality of code phases and accesses the digital terrain data in memory with an initial height of a receiver to determine a location of the receiver indicated by the plurality of satellite codes and the digital terrain data;

a message containing the location data sent from the transceiver;

a horizontal error ellipse parameter in an altitude equation that forms an error ellipse having a major axis and a minor axis that corresponds to an altitude error about the initial height of the receiver;

a plurality of points along the major axis and the minor axis that form a grid of grid points that the controller accesses the digital terrain elevation data in memory at the grid points; and

a two-dimensional polynomial surface fit over the grid points.

35-44. (Canceled)